

MAINTENANCE BULLETIN #27

Subject: Maintenance and Inspection of Air Brake Systems.

**Operators shall be responsible to ensure the braking system is in safe operating condition before the vehicle moves.
(Ref. CCR 13 sec. 1215a.)**

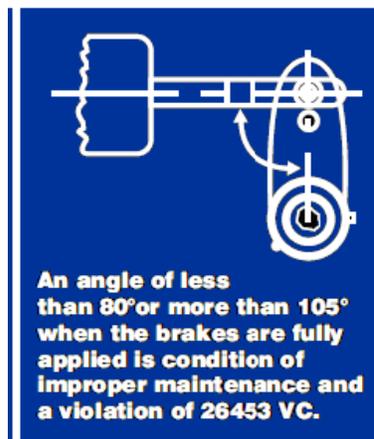
1. Pre-Trip Air Brake System Test and Checks

Note: These tests along with the vehicle Pre-Trip Inspection should be conducted as close to the beginning of the daily shift as possible (Ref. CVC 34500.1)

- Check the air compressor belt for tightness and integrity.
- Check brake drums, brake linings, brake hoses, slack adjusters and brake pots.
- Check brake adjustment (an angle of less than 80 degrees or more than 105 degrees when the brakes are fully applied is condition of improper maintenance and a violation of CVC 26453).

All OES fire apparatus have automatic "S" Cam Brake Slack Adjusters. Automatic slack adjusters are designed to keep the travel of the air brake chamber rod to a minimum and to maintain clearance between the brake shoe and brake drum. It should maintain push rod travel well within the maximum stroke tolerances for which the brakes must be readjusted. When an automatic slack adjuster is found to be out of adjustment, utilize the following procedure:

1. Park the vehicle on level ground, place transmission in neutral and chock the wheels. Assure that the air system is fully charged (100-120 psi.).
2. Release the parking brake.
3. Apply foot brake firmly (full application) 6-10 times.
4. Recharge the air system to 100-120 psi.
5. Recheck brake adjustment.



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6. If one wheel measurement remains in excess of the maximum stroke after this procedure is completed, the vehicle shall be considered **OUT OF SERVICE** and your agency fleet manager should be contacted immediately.
- In-Cab Air Brake System Check
 1. Drain each air reservoir to 0 psi. This will allow most of the contaminants (water and oil) to be eliminated from the tank. Close drains.
 2. Start engine and run at fast idle after reaching operating oil pressure.
 3. Note the air compressor cut-out pressure. Governor cut-out pressure is approximately 120 psi. For vehicles equipped with ABS brakes, the cut-out pressure is approximately 130 psi.
 4. Apply service brakes and note stoplight operation. Stoplight operation should occur with approximately 5/8" pedal travel or about 4-6 psi. application air pressure.
 5. Drain air pressure from system by pumping brakes slightly and note governor cut-in pressure. The governor should cut-in at no lower than 85 psi. Continue to drain air pressure by pumping the brakes and note low air warning light and buzzer. The low air warning light and buzzer should activate between 55 and 75 psi.
 6. With all the drain cocks closed, build up air pressure in the system to governed air pressure (120 – 130 psi. for ABS system). Air pressure should build from 85 psi. to 100 psi. in 45 seconds (if the system has a larger storage tank configuration, the buildup could take longer and still be safe).
 7. The following air pressure loss test should be made with the parking brake released:
 - a. Stop the engine and observe the pressure gauge for two (2) minutes. Pressure loss for one-minute should not exceed 2 psi. for a single vehicle.
 - b. With full system air pressure (governed psi.) turn off the engine. With the parking brake released, apply and hold a full foot valve application. Observe the pressure gauge for two (2) minutes (listen for air leaks). Upon application of the foot valve there will be an initial pressure drop of approximately 10% from the original pressure reading. After the initial application pressure drop, the maximum pressure loss allowed should not exceed 3 psi. for a single vehicle for one-minute during application.

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If loss is excessive in either of the above tests, contact your fleet manager. Ensure any air leaks are repaired before operating vehicle.

8. Apply and release service brakes. Sluggish application or release may indicate a leaking diaphragm, weak return springs, binding brake cam shaft, damaged or crimped air lines or damaged quick release valve.

Brakes should only be tested on dry, clean, reasonably smooth and level roadway. Test brakes at no more than 10 mph with both light and heavy pedal pressure. Avoid locking the wheels and sliding the tires. Check for any pulling to one side, unusual feel or delay in stopping action.

If repairs are required, place unit out of service until qualified maintenance personnel make corrections.

2. Brake Inspection – Major

At least once per year, qualified personnel shall:

- A. Inspect brake lining and drums. Wheels do not need to be removed if backing plates are removable.
- B. Inspect wedge assemblies (where applicable).
- C. Inspect 'S' cam, shaft and bushings for wear.
- D. Inspect air brake chambers and air lines.
- E. Inspect anchors and springs.
- F. Inspect anti-skid brake components (where applicable).
- G. Check oil level in oil lubricated front wheel bearings.

If problems are noted on an OES brake system, apparatus must immediately be placed out of service until proper corrections are made.